

Preface

Thank you for purchasing the Pro-face LogiTouch Type-D DeviceNet master unit.

The LogiTouch Type-D (also referred to as the “LT Type-D”) allows connection to the DeviceNet Fieldbus to access many sensors, actuators, and other peripherals which communicate through DeviceNet networks.

This supplement to the LT Series User Manual provides information about:

- use of the LT Type-D model of the LT Graphic Logic Controller series
- additional features and differences in the standard LT types

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Package Contents

The package for the LT Type-D DeviceNet master contains:

- the LT Type-D unit
- a DeviceNet Connector
- the *LT Type-D Installation Guide*
- DeviceNet Master Resource CD-ROM
- mounting brackets
- installation gasket

The contents of this package were checked for quality at the factory. However, should anything be amiss, please contact your local Pro-face distributor for prompt service.

UL/CSA/CE Listings

UL/c-UL (CSA) NOTES

The LT Type-D, model GLC150-BG41-DNM-24V, is a UL/c-UL listed product.

(UL file: E214883)

This unit conforms to the following standards:

- UL508: Industrial Control Equipment
- UL1604: Electrical Equipment for Use in Class I and II Division 2 and Class III Hazardous (Classified) Locations
- CAN/CSA-C22.2, No. 1010: Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use
- CAN/CSA-C22.2, No. 142-M1987: Process Control Equipment
- CAN/CSA-C22.2, No. 213-M1987: Non-incendive Electrical Equipment for Use in Class 1 Division 2 Hazardous Locations

To meet the above standards, installation and usage must adhere to the cautions and instructions described in the *LT Type-D Installation Guide* included in this unit's package.

CE MARKING NOTES

The LT Type-D, model GLC150-BG41-DNM-24V, is a CE marked EMC compliant product. This unit conforms to the EMC Directive 89/336/EEC and amending directives. For detailed CE marking information, contact your local Pro-face distributor.

FCC NOTES

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



LT Type-D has NOT been tested for conformance to CNS standards.

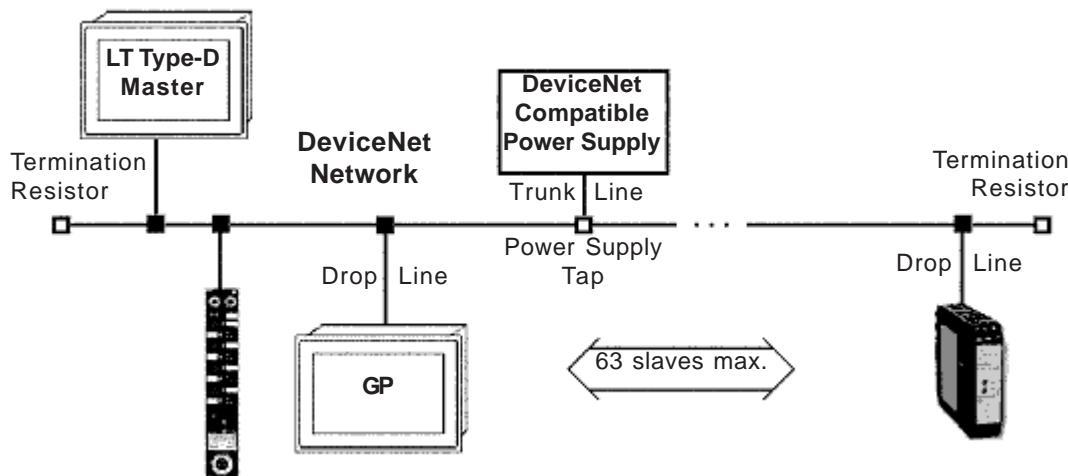
System Design

The following LT Type-D is available in addition to the other LT Types.

LT Series Type	Feature	Model No.
Type-D	DeviceNet Network I/F	GLC150-BG41-DNM-24V

DeviceNet Network System Design (Type-D only)

The LT Type-D allows connection to a DeviceNet Network as a master. With this connection, the LT Type-D can control and monitor up to 63 slave nodes on the single channel.



- The LT Type-D connects only to DeviceNet. It does NOT connect to serial devices, or the Flex Network system.
- The LT Type-D connects only as a master to the DeviceNet Network.

The Master Baud Rate and MAC ID settings for the LT unit can be made in the LT Editor package.

Reference For details, refer to the LT Type-D Editor Operation Manual Supplement.

Supported Devices

The LT Type-D will communicate with any DeviceNet slave that conforms to standard physical and logical protocol specifications of the DeviceNet. Supported modes of communication are:

- Polled
- Bit Strobed
- Cyclic
- Change of State (COS)

Up to 48 I/O Points (Word and/or Discrete) are supported for each slave device. This total includes both inputs and outputs.

Additional Accessories

SOFTWARE

Product Name	Model Number	Description
LT Editor	GLCLT-ED01W-V10*	LT HMI and Ladder Logic Editor software (on CD)
DeviceNet Master Resource CD-ROM	142151 (XYCOM)	Add-on software plus manuals for LT Editor to work for LT Type-D DeviceNet (on CD)

* LT Editor Ver. 2.0 or later.

TOOL CONNECTIONS

Product Name	Model Number	Description
Screen Data Transfer Cable	GPW-CB02	Connects the LT to the PC for downloading screen and ladder logic application files

DEVICENET ACCESSORIES

Product Name	Model Number	Description
DeviceNet Connector Plug	142055 (XYCOM)	Plug connects to the LT DeviceNet connector. Allows wiring in the field with a screw clamp on each pin.

OPTIONAL ITEMS AND MAINTENANCE ACCESSORIES

Product Name	Model Number	Description
Screen Protection Sheet (5 sheets/set)	GP37W2-DF00	Disposable protective, dirt-resistant sheet for the LT screen. The LT touch screen functions with this protective cover attached.
Installation Fastener (4 pieces/set)	GP070-AT01	Special clamps to attach the LT to a panel.
Installation Gasket	GP37W2-WP00-MS	Provides a moisture-resistant seal when installing the LT. Same as the seal included in the LT unit original package.

Specifications

General Specifications

The general specifications for the LT Type-D and other LT types are the same.

Reference Refer to the LT Series User Manual for details.

Functional Specifications

Display Memory, Control Memory, and Clock specifications are identical to those of the LT Series.

Reference Refer to the LT Series User Manual for details.

Interface Specifications

EXTERNAL INTERFACES

The Tool Connector and the Alarm Output Connector interfaces are the same as those of the LT Series.

Reference Refer to the LT Series User Manual for details.

The following table lists overall specifications for the DeviceNet Connection features.

Communication Topology	Trunk with Drop Lines
Connection Mode	1:N – i.e., 1 LT; multiple slave devices (Multiple Masters)
Transfer Distance	125kbaud: 500m max. 500kbaud: 100m max.
Transfer Speed*	125kbaud, 250kbaud, 500kbaud
Number of Stations	64 nodes max., including LT
Number of I/O Points	1008 total – 48 I/O Terminals max., per node (inputs and outputs) Inputs can be all Words or all Discretes. Outputs can be all Words or all Discretes.

* All devices on the network must operate at the same baud rate.

Reference For further information, refer to the DeviceNet Specification.

GENERAL DEVICENET INFORMATION

Below are some important points regarding the DeviceNet data for the LT Type-D:

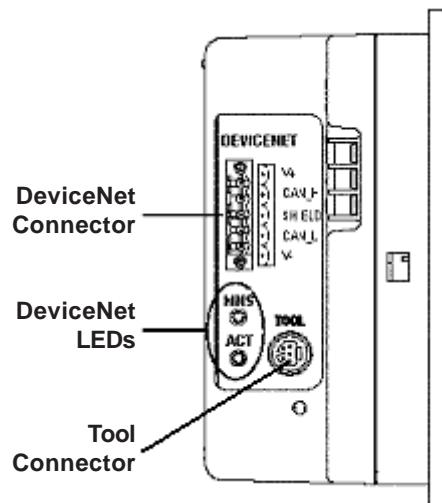
- DeviceNet Versions: Volume I version 2.0, Volume II version 2.0 May 31, 2000
- Digital's Vendor ID: 96 decimal
- Device Profile: Communication Adapter 0x12
- Baud Rate: Software settable
- MAC ID: Software settable
- Connector type: Open style

Part Names and Functions

DEVICENET CONNECTOR

The DeviceNet Connector connects the LT Type-D to a DeviceNet Network. When connecting in the orientation shown, V+ (Pin 5) is the top signal.

►Reference► Refer to the LT Series User Manual for information about other parts and functions.



DEVICENET LEDS

The DeviceNet LEDs show the status of the LT Type-D unit's communication card and the DeviceNet Connection.

On startup, the LT Type-D performs a self-test. When the self-test is successful:

1. The MNS (Module Network Status) LED turns Red, then Green, then OFF.
2. The ACT (Activity) LED turns Green, then Red, then OFF.
3. The ACT LED turns Red for a few seconds, then turns steady Green.

After completion of the self-test, the LEDs indicate the LT Type-D unit's status, as described in the following table.

LED	State	Description
MNS (Module/Network Status)	OFF	Not powered, or not online
	Green	Powered, online, and connected
	Red	Critical communication fault
	Flashing Green	Online, operating, but not connected
	Flashing Red	Minor communication fault, or connection timed-out
	Flashing Green / Red	Communication faulted; "Identify Comm Fault Request" has been received
ACT (Activity)	OFF	Initialization not started yet, or internal failure
	Green	Initialization succeeded
	Red	Initialization in process or failed
	Flashing Green	NA Reserved
	Flashing Red	NA Reserved

►Reference► For a definition of the MNS (Module Network Status) LED, refer to the DeviceNet Specification.

TOOL CONNECTOR

The tool connector is used to download screen and Ladder Logic data to the LT unit.

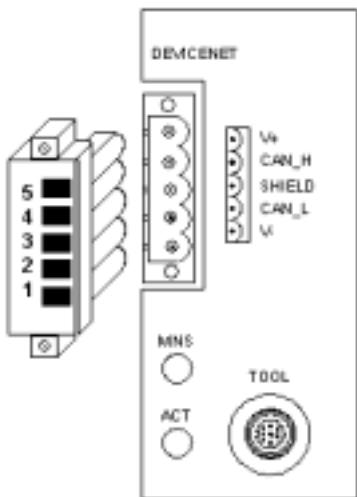
Dimensions

The overall unit dimensions and the mounting hole are identical to the LT Series' units.

►Reference► For details, refer to the LT Series User Manual.

Wiring

The following shows how the DeviceNet Connector plugs into the LT Type-D unit.



To comply with UL 1604, use a connector with the mounting screw ears on either end.

►Reference See the ■ Additional Accessories section for a suitable connector.

For recommended connectors and cables, refer to the Open DeviceNet Vendor Association (ODVA) Web site, at <http://www.odva.org>.

The cable wires are normally coded as follows.

Signal	Wire Color	Pin Number
V-	Black	1
CAN_L	Blue	2
Shield	Bare Wire	3
CAN_H	White	4
V+	Red	5

The transceivers of the LT Type-D are powered from an internal supply, and therefore will continue to operate even if the DeviceNet Bus does not have a power supply connected. These transceivers are isolated from the internal signals.

Termination resistors are required for DeviceNet to operate correctly. If the LT Type-D is at the end of the Trunk Line, then a 121 ohm resistor will be needed between the CAN_L and CAN_H pins.

►Reference For details, refer to Chapter 9 – DeviceNet Specification.

Data Download

The LT Type-D unit can accept downloaded project information from the LT Editor via the GPW-CB02 serial download cable (sold separately). Make sure the project file that was created using the LT Editor was made for an LT Type-D. Transfer of data will then be the same as other LT types.

The LT Type-D may be packaged with a pre-installed sample application that is ready for quick setup and usage.

Offline Menus

The LT Type-D Offline menu screens are entered in the same way as all other LT units.

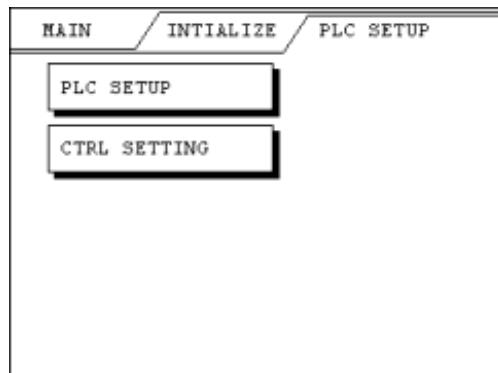
►Reference For details, refer to the LT Series User Manual.

The following sections describe specific settings and Offline menus associated with configuration of the LT Type-D.

Entering the DeviceNet Offline Menus

To enter the LT Type-D unit's Offline menu screens:

1. From the INITIALIZE menu, press PLC SETTINGS to open the PLC SETUP menu.
2. From the PLC SETUP menu (see right), press CTRL SETTING to open the CTRL MENU.
3. From the CTRL MENU, press DeviceNet Driver to open the DeviceNet Menu.
4. From the DeviceNet Menu (see right), DeviceNet-related functions can be selected.



DEVICENET REV.

Pressing this button will display the DeviceNet Firmware Revision.

NETWORK SCAN

The Network Scan collects information over the DeviceNet network about all connected slaves. As a Master, the LT uses Explicit Messaging for the following configurations.

Scan Preparation

In the following screen, set the baud rate you wish to scan at.



Note: Settings made here will not affect the downloaded project.

Network Scan: Prepare	
Baud Rate	125Kb
Master MAC ID	0
START	

Scan Results

The MAC ID for each slave connected at that rate will display in reverse video.

Network Scan								SET	RET
Total Connected I/O units								1	
Connected S-No.s are reverse color.									
0	1	2	3	4	5	6	7		
8	9	10	11	12	13	14	15		
16	17	18	19	20	21	22	23		
24	25	26	27	28	29	30	31		
32	33	34	35	36	37	38	39		
40	41	42	43	44	45	46	47		
48	49	50	51	52	53	54	55		
56	57	58	59	60	61	62	63		

A number of error codes may also appear in this screen, as listed in the following table. If an error code not listed here appears, it may indicate an internal failure in the hardware or software. Please report this information to your local Proface support office.

Error Code	Description
1	Duplicate MAC ID.
32	Duplicate MAC ID check failed. No devices at selected baud rate.
33	Error retrieving network scan data.
34	Error writing network scan packet.
-1	Error reading slave details.

SLAVE DETAILS

When a MAC ID appearing in reverse video is pressed, the details of that slave device can be viewed on the Slave Details screen, as follows.

Slave Details:	
Name:	<input type="button" value="ESC"/>
TSX MODICON Momentum	
MAC ID:	63 <input type="button" value="MAC"/>
Baud Rate:	125Kb <input type="button" value="Baud"/>
Vendor ID:	243 Expl: Yes <input type="button" value="Set"/>
Device Type:	0 Polled: Yes <input type="button" value="Get"/>
Product Code:	2065 Bit Str: Yes <input type="button" value="Set"/>
Major Revision:	1 Cyclic: <input type="button" value="Set"/>
Minor Revision:	10 COS: <input type="button" value="Get"/>
Input Bytes:	2 UCMM: <input type="button" value="Get"/>
Output Bytes:	2 Error: <input type="button" value="Get"/>

Press ESC to return to the Network Scan screen.

Press the MAC, Baud, Set, or Get buttons to open the screens described in the following sections.

In this screen, it is important that all the following data match with the configuration downloaded from the Editor:

Item	Comment
Mac ID	Device's Station Number
Baud Rate	Baud Rate for the device. This needs to be the same for all slaves on the same network.
Vendor ID	Unique number controlled by ODVA
Device Type	Identifies the specific functionality of the device
Product Code	Vendor's own number to uniquely identify the product.
Major Revision	Minor revision is not used for keying
Input Bytes	These must also match, or the Master will not communicate with the device.
Output Bytes	"

The Connection Types shown in the Slave Details screen are as follows:

Expl	Explicit Connection
Polled	Polled
Bit Str	Bit Strobed
Cyclic	Cyclic
COS	Change of State

You may choose any of these that have "Yes" beside them to configure the device in the Editor. If UCMM has a Yes beside it, you will have to select UCMM and determine the group it will communicate on before the master will communicate with the device. If you are uncertain which UCMM group the device supports, select Group 3.

The Error field provides an error code should there be a failure in communicating with the Device to get detail information. Error code 64 means internal blocking has disallowed the sending of the request.

Reference All other error codes can be cross referenced in Appendix H of the DeviceNet Specification Volume I.

Configuring Slaves in Offline Mode

CHANGE MAC ID

A slave's MAC ID can be changed from the Offline Menus on the LT Type-D. Use the Change MAC ID screen to make this change.

1. Press the rectangle next to New MAC ID.

Change MAC ID:	<input type="button" value="Chng"/>	<input type="button" value="ESC"/>
Old MAC ID	63	
New MAC ID	45	
Error Code	0	

2. When the keypad pops up, enter the new MAC ID.



Note: For this and the following screens, an error code of 0 means the slave successfully processed the request. All other error codes are described in the ODVA's *DeviceNet Specification*.

CHANGE BAUD RATE

The baud rate of a slave can also be configured. Normally, connect the slave in a one-to-one network with the LT.

1. Perform a Network Scan to find the slave.
2. Press the reverse-displayed MAC ID to view the slave's details.
3. Press Baud to open the Change Baud Rate screen.
4. Press the rectangle to toggle through until the desired rate appears, then press Chng.

5. Reconnect the slave and LT to the overall network, then exit the offline menus.



Note: Normally, slaves require a power cycle before any changes will be recognized.

Change Baud Rate:	
<input type="button" value="Chng"/>	<input type="button" value="ESC"/>
New Baud Rate	<input type="button" value="125Kb"/>
Old Baud Rate	<input type="button" value="250Kb"/>
Error Code	<input type="button" value=" "/>

The master's baud rate can only be set in the Editor, and then downloaded to the panel. This resets the functionality of the Master and thus implements the new baud rate immediately. It is advised to set the baud rate for all slaves on the network, then download to the master, and finally, cycle power to bring the whole network to the new baud rate.

SET AND GET ATTRIBUTES

General attributes can be configured for the selected slave using the offline menu's Set Attributes screen:



Note: A similar screen (Get Attributes) is for reading back from the slave device.

Set DeviceNet Attribute	
<input type="button" value="SET"/>	<input type="button" value="ESC"/>
Class	<input type="button" value="15"/>
Instance	<input type="button" value="1"/>
Attribute	<input type="button" value="1"/>
Data	<input type="button" value="15"/>
Error Code	<input type="button" value=" "/>

Values for Class, Instance, and Data can be 16-bit numbers (0–65535). The Attribute is an 8-bit number (0–255). All values on the SET screen are in decimal. The GET screen takes input in decimal and displays the return value in Hex.

Runtime and Error Codes

Reference For error messages and troubleshooting information, refer to the LT Type-D Editor Operation Manual Supplement and the LT Series User Manual.

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